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## VENESECTON IN CARDIAC AND ARTERIAL DISEASE.

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One is almost expected to offer an apology for bringing the subject of venesection before a medical society at the present day, owing to the discredit into which the practice has fallen during the last thirty years. Such an apology exists in the fact that an interest in the subject has quite recently been revived, and venesection has been discussed at meetings of various medical societies and in current medical literature. Special reference may be made to a paper by Dr. Pye-Smith, abstracted in the *British Medical Journal*, January 31, 1891, on "The Therapeutical Value of Venesection; its Indications and its Limits," read and discussed at a meeting of the Royal Medical and Chirurgical Society of London. In this paper were recorded nearly fifty cases in which venesection has been practised in many different forms of disease, including bronchitis, broncho-pneumonia, croupous pneumonia, miliary tuberculosis of the lungs, thoracic aneurism, valvular disease of the heart, pericarditis, Bright's disease, apoplexy and epilepsy. The writer considered the indications for venesection in the order of their importance, to be: first, cyanosis with dilatation of the right side of the heart, whether from pulmonary or from some other form of obstruction to the circulation; secondly, the intense pain of thoracic aneurism; thirdly, uraemic and prolonged epileptic convulsions. Reference was also made to bleeding in fevers and inflammatory disorders. In the discussion which followed, the opinions expressed were in the main corroborative of the conclusions reached by the writer of the paper.

Since the opening of the Johns Hopkins Hospital in May 1889, we have had occasion to practise venesection on five patients, an account of which is subjoined.

*CASE I.—Thoracic Aneurism—venesection for urgent dyspnoea with cyanosis—temporary relief—death from exhaustion.*

William W., aged 73, was admitted to the Johns Hopkins Hospital on May 18, 1889. He had been ailing for some months from cough, shortness of breath and pain in the right side of the chest and right shoulder and on admission was found to present the signs of aneurism of the ascending arch of the aorta. He complained especially of shortness of breath and of intense pain over the right breast and down the right arm. With rest in bed and the use of iodide of potassium he improved slightly and the intense pain was somewhat alleviated, but at night he still suffered very much from dyspnoea and cough, for which morphia had to be used freely. On the evening of May 29th he had a more than usually severe attack of shortness of breath accompanied by marked cyanosis and distention of the cervical veins. As his heart was beating strongly and regularly, it was considered that venesection would give him at least temporary relief, and accordingly fourteen ounces of blood were withdrawn from his right arm. This afforded him temporary relief; both the cyanosis and the dyspnoea became less, and he spent a more comfortable night. Shortly after the bleeding he had a profuse perspiration. He died from exhaustion two days later. The autopsy revealed a large saccular aneurism compressing the right lung, which was the seat of a chronic interstitial pneumonia.

*CASE II.—Chronic Nephritis with dilated heart—extreme cyanosis—venesection with temporary relief—death.*

Jeremiah B., aged 41, was admitted to the Johns Hopkins Hospital February 5, 1890. His illness had commenced six months before with shortness of breath, and three months later he had noticed that his legs were swollen. During November he had improved slightly, but since that time both the dropsy and the shortness of breath had gradually increased, until it had involved his abdomen and arms. He had not noticed any change in the quantity or appearance of his urine. The condition of the patient on admission was as follows: Very plethoric and stout; general anasarca; respirations a little labored, 44; pulse 108, regular; no increase in tension; slight lividity of lips and tips of fingers and ears; venules of the cheeks and nose distended. There was a diminution of the area of lung resonance in the lower thorax in

front, in the axilla and behind, and the breath-sounds at both bases were enfeebled. Cardiac dulness began at the third rib, but the inferior and lateral limits could not be made out. There was gallop rhythm at the apex, a moderately intense systolic murmur in the anterior axilla with accentuation and reduplication of the second sound at the pulmonary cartilage. The abdomen was very large; but there was so much fat that it was not possible to demonstrate any ascites. The urine was diminished in amount, sp. gr. 1028, and contained albumen and fatty hyaline and granular casts. The patient was freely purged with salts and given half an ounce of the infusion of digitalis every four hours. During the next three days the urine progressively increased in amount, the dropsy was slightly diminished, and the heart-sounds became more distinct, though the pulse remained rapid. At mid-day January 10th, after coughing up some bloody sputum during the morning, he had a severe attack of dyspnoea, and when seen a few minutes later he was extremely cyanosed; the veins of the neck were distended; the breathing feeble and shallow, while the pulse could not be counted at the wrist. The heart-sounds were rapid and indistinct, and there was tremor and jactitation of the extremities. Venesection was deferred until 2:15 p. m., when eighteen ounces of blood were withdrawn. The relief was immediate, the breathing becoming easier, and the cyanosis disappearing almost entirely. There was no return of the cyanosis or dyspnoea, but the patient died on the morning of the next day. An autopsy could not be obtained: it is probable that there were extensive hemorrhagic infarctions in the lungs.

CASE III.—*Mitral regurgitation with dilated and irregular heart—cyanosis and dyspnoea—venesection with marked relief—sudden death from syncope six days later.*

Mark W., aged 22, was admitted to the Johns Hopkins Hospital June 17, 1890. He had had three attacks of inflammatory rheumatism, the first occurring four years ago, but had not shown any symptoms of cardiac mischief until three months previous to admission, when he began to be short of breath and to have palpitation on slight exertion. He had also suffered from vertigo and slight cough; his legs had been swollen for some days, and he was passing less urine than usual. Condition on admission: Face pale, slight blueness of finger nails, oedema of legs; there was orthopnoea, R. 27. The pulse was intermittent, 36 per minute, only

two out of a series of three beats of the heart reaching the radial pulse. There was slight impairment of resonance at the base of the right lung with enfeebled breath-sounds. The whole of the left side of the chest was lifted with the cardiac systole, and there was throbbing in the neck and at the epigastrium. The apex impulse was forcible and diffused in the sixth intercostal space outside the nipple line. The area of cardiac dullness was increased in both diameters. There was irregularity in the rhythm and intensity of the cardiac beats, a loud whiffing systolic murmur at the apex, and marked accentuation of the second sound at the pulmonary orifice. There was marked albuminuria without tube-casts. The patient was ordered sulph. strychnia, gr.  $\frac{1}{10}$  ter die, and ten days later, sparteine gr.  $\frac{1}{2}$  was substituted for this. There was some improvement in the pulse and the œdema partially disappeared. On July 4th there was considerable cyanosis of the hands and lips; not much dyspnoea, and free perspiration. The pulse was very small and in marked contrast to the heaving impulse in the præcordial region. The heart's action was very irregular. Fifteen ounces of blood were drawn from the left arm. On the following morning the color of the patient was much better. The pulse was 96, of fairly good volume; the heart's action only slightly irregular, and there was no longer such disproportion between the cardiac systole and the pulse. The improvement continued until six days later, when the patient died suddenly in a syncopal attack. An autopsy could not be obtained.

CASE IV.—*Arterial sclerosis—cardiac hypertrophy and dilatation—venous engorgement with slight cyanosis—stupor and delirium—venesection—recovery.*

David B., aged 50, was admitted to the Johns Hopkins Hospital December 16, 1890, suffering from cough, shortness of breath and dropsy. His illness dated from fourteen weeks before entering the Hospital. At that time he had been seized suddenly at night with shortness of breath and cough, and latterly the dyspnoea had been constant with progressively increasing dropsy and decrease in the quantity of urine passed daily. There had also been slight transitory mental disturbance. There was no history of rheumatism or syphilis. On admission he presented the following condition: Oedema of lower extremities and of the right side of the trunk (he had been lying for some time on the right side); pulse 116, regular; tension increased; respirations 44, of



the Cheyne-Stokes type. There were bronchial râles at the bases of both lungs, but no dulness. The apex beat was neither visible nor palpable, and the superficial area of cardiac dulness was not increased. There was fetal heart rhythm at the apex, and gallop rhythm at the fourth rib. No accentuation of the aortic second-sound. The urine contained a small percentage of albumen with a few hyaline and granular casts. With the use of digitalis, free purgation with salts and an occasional hot bath, the œdema rapidly subsided and the pulse became slower and of better volume. He still suffered from dyspnoea, however, and was very restless and slightly delirious at night. On December 23rd he was not so well. His tongue was dry, his pulse more rapid and occasionally intermittent, and there was drowsiness with rambling even in the day time. There was in addition considerable venous engorgement of all the superficial veins with slight cyanosis and extension of the cardiac dulness to the right of the sternum. At 3 p. m., sixteen ounces of blood were taken from his left arm, which lessened the venous engorgement in a marked degree. He was restless until three o'clock in the morning, when he fell asleep. On the next day he was quite rational; there was still some dyspnoea, but the pulse was 96 and regular. During three days following the bleeding he passed a very large quantity of urine. On January 7th he was quite free from dropsy, his mind was quite clear, he slept and ate well, and his pulse was regular, ranging from 60-70. He was discharged on this day at his own request. Three months later he called at the hospital and stated that he felt quite well and was at work.

*CASE V.—Mitral regurgitation with dilated and irregular heart—extreme cyanosis—venesection—recovery.*

John B., aged 44, was admitted to the Johns Hopkins Hospital April 13, 1891, suffering from dropsy and shortness of breath. In the autumn of 1889 he had suffered severely for three months from inflammatory rheumatism, all his larger joints having been swollen and very painful, and at the same season in 1890 he had had an attack of typhoid fever. He gave no history of venereal disease. Four weeks before his admission to the Hospital he had noticed that his feet were swollen. The dropsy increased rapidly and two weeks later he was quite short of breath, so much so that if he attempted to lie in bed he would choke. He had not complained of palpitation, his bowels were regular, and he passed

about the same quantity of urine as usual. When seen shortly after his admission to the ward he was found to be cyanosed, sitting up in bed and somewhat breathless. His pulse was 90-100, small and irregularly intermittent. There was a wide area of heaving cardiac impulse, the apex beat being three fingers breadth outside the left nipple. A loud blowing systolic murmur was present at the apex and was transmitted into the left axilla. The second sound was accentuated at the left border of the sternum. The lungs were clear with the exception of a few mucous râles at the bases. There was enlargement of the liver without ascites, and considerable œdema of the lower extremities. The urine was scanty, highly colored and albuminous; it contained some hyaline and finely granular casts. A milk diet, free purgation with salts, and *tr. digitalis* m. xv. every 4 hours, were ordered. At midnight he was very cyanotic and breathing heavily. The radial pulse was just perceptible, only one heart-beat in every four or five being felt at the wrist. The præcordial impulse was heaving and irregular, and the heart-sounds were loud. A bleeding of eighteen ounces produced immediate relief; the dyspnoea disappeared almost entirely, the cyanosis diminished, the pulse at the wrist increased in volume and frequency, and the patient was relatively comfortable for the rest of the night. The next morning he was looking well and sitting up in bed. There was still a little shortness of breath and blueness of the lips and finger tips. The pulse was 96, of fairly good volume but still irregularly intermittent. The upper limit of the cardiac dulness was at the third rib, and transversely it extended from the right border of the sternum to the apex impulse in the sixth intercostal space. There was some engorgement of the veins at the root of the neck. The auscultatory signs of the heart and lungs were as described above, and there was a slight elevation of temperature. The *digitalis* was discontinued and was again given on the following day in smaller doses; and two days later *strychnia* and *strophanthus* were substituted for it. From April 15 to May 1st there was irregularity in the volume of the individual beats, but not intermittency, and the urine was free from albumen and casts. On May 6, after having been up and about for a week, he was feeling quite well; there was no œdema, lividity or shortness of breath, and he ate and slept well. The radial pulse was 80, small, irregular and once more occasionally intermittent. There was still a marked contrast between the force of the ventricular contraction



and the volume of the pulse. The physical signs were not materially different from those observed the day after the bleeding. He was discharged from the hospital on this day.

The above cases illustrate the value of bleeding as a means both of affording temporary relief from distressing symptoms due to disturbances of the circulation, and also of saving life and even restoring patients to comparative health.

There is little to be added to Dr. Pye-Smith's conclusions as regards the indications for venesection and its relative value in the various classes of cases which require its performance. Our experience has been, with one exception, limited to cases of primary cardiac or arterial disease, which are undoubtedly those in which most good may be expected from its use.

Huchard<sup>1</sup> advocates small bleedings from time to time in the first stages of arterial sclerosis and thinks that in this way it may be possible to lessen and even delay the evils resulting from prolonged high vascular tension. He insists particularly on the value of venesection in the later stages of the same disease when the left ventricle is no longer able to cope with the increased peripheral resistance and volume of blood, and the heart is in danger of sudden arrest. This may occur even when there is but little œdema or cyanosis, though there is usually engorgement of the right side of the heart and of the veins. In addition to its purely mechanical effect, venesection removes from the blood a considerable amount of toxic material which has accumulated in it owing to the imperfect performance of the functions of the kidneys and liver, these viscera being usually more or less affected by the general arterial sclerosis.

The contra-indications to venesection in cardiac and arterial disease are few. Even when death is imminent, the rapid abstraction of some ounces of blood not infrequently saves the patient. It is obvious that when marked ascites or pleural effusion co-exists with cyanosis and distressed breathing the abdomen or the pleura should be tapped and venesection delayed until it is apparent whether either of these procedures do or do not afford relief. Large hemorrhagic infarctions of the lungs and extensive disease of the myocardium or of the coronary arteries, could such conditions be definitely ascertained, would probably be a contra-indication as even temporary relief could hardly be expected under such circumstances.

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<sup>1</sup> Huchard: *Maladies du cœur et des vaisseaux*, Paris, 1889.